River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
MISSISSIPPI DRAINAGE—continued	*Feet*			*Feet*	
Big Pigeon: Newport, Tenn.	6	5	6	9.8	5
		14	14	6.5	14
		23	23	8.5	23
Clinch:					
Clinton, Tenn.	25	24	26	34.5	24
Kingston, Tenn.	25	24	24	27.0	24
Elk: Fayetteville, Tenn.	14	22	28	[3] 28.0	23
Duck: Columbia, Tenn.	30			43.8	25
Hiwassee: Charleston, Tenn.	22	24	24	22.6	24
Mississippi:					
Muscatine, Iowa.	16	19	[2]	16.7	23
Keokuk, Iowa.	14	16	[2]	19.4	23
Warsaw, Ill.	17	16	[2]	22.0	23
Quincy, Ill.	14	14	[2]	20.5	25
Hannibal, Mo.	13	2	3	13.8	3
		14	[2]	20.4	25
Louisiana, Mo.	12	1	4	13.7	3
		14	[2]	18.4	19
Grafton, Ill.	18	16	[2]	22.9	27
Alton, Ill.	21	17	[2]	25.3	18
Chester, Ill.	27	18	23	28.8	20
Cape Girardeau, Mo.	30	18	[2]	34.1	20
New Madrid, Mo.	34	6	[2]	41.0	21
Cottonwood Point, Mo.	35	11	[2]	37.6	22–23
Memphis, Tenn.	35	11	[2]	40.8	24–25
Helena, Ark.	44	14	[2]	50.4	27
Arkansas City, Ark.	48	18	[2]	53.4	[4] 31
Greenville, Miss.	42	21	[2]	46.3	[4] 31
Vicksburg, Miss.	45	21	[2]	49.6	[4] 31
Natchez, Miss.	46	26	[2]	48.5	[4] 31
Angola, La.	45	31	[2]		
Baton Rouge, La.	35	30	[2]	35.5	[4] 31
Wisconsin: Portage, Wis.	17	24	25	17.5	24
Rock: Moline Bridge, Ill.	11	5	[2]	[5] 14.9	11
				13.4	20
Cedar: Cedar Rapids, Iowa.	14	18	20	20.1	18
Des Moines:					
Boone, Iowa.	20	16	17	20.9	17
Tracy, Iowa.	15	12	22	18.3	16
Ottumwa, Iowa.	10	14	24	14.5	17
Raccoon: Van Meter, Iowa.	13	12	19	18.5	12
Illinois:					
Morris, Ill.	13	4	4	13.2	4
		16	20	17.6	17
		23	23	13.3	23
Peru, Ill.	14	[1]	[2]	21.2	18–19
Henry, Ill.	10	[1]	[2]	16.0	20–21
Peoria, Ill.	18	[1]	[2]	22.5	20–22
Havana, Ill.	14	[1]	[2]	19.4	23–24
Beardstown, Ill.	14	[1]	[2]	20.9	22–25
Pearl, Ill.	12	3	[2]	19.6	27–28
Meramec:					
Pacific, Mo.	11	18	19	13.7	19
Valley Park, Mo.	14	19	19	14.3	19
Bourbeuse: Union, Mo.	12	18	18	13.8	18
St. Francis:					
St. Francis, Ark.	17	[1]	14	21.8	3–4
		18	27	20.4	22
Marked Tree, Ark.	17	16	18	17.0	16–18
Missouri:					
Bismarck, N. Dak.	15	27	28	18.5	27
St. Charles, Mo.	25	17	19	26.4	17
Big Sioux: Akron, Iowa.	12	14	15	17.8	15
Grand:					
Gallatin, Mo.	20	[1]	1	25.3	Feb. 28
		5	9	27.8	8
Chillicothe, Mo.	18	[1]	11	26.4	Feb. 28
		13	17	22.4	14
Brunswick, Mo.	12	16	16	12.2	16
Arkansas: Yancopin, Ark.	29	6	[2]	38.9	30–31
Petit Jean: Danville, Ark.	20	[1]	2	23.0	Feb. 27
White River:					
Georgetown, Ark.	22	4	10	22.8	6–7
DeValls Bluff, Ark.	24	8	10	24.0	8–10
Black:					
Corning, Ark.	11	[1]	27	13.4	1–2
Black Rock, Ark.	14	[1]	22	19.7	5
Cache: Patterson, Ark.	9	3	18	10.1	6–7
YAZOO BASIN					
Yazoo: Yazoo City, Miss.	25	23	[2]	26.1	[4] 31
Tallahatchie: Swan Lake, Miss.	25	4	[2]	31.7	29–31
Sulphur:					
Ringo Crossing, Tex.	20	13	14	20.5	14
Finley, Tex.	24	2	6	25.3	3
PACIFIC DRAINAGE					
Willamette: Harrisburg, Oreg.	10	22	22	10.5	22

[1] Continued from last month.
[2] Continued at end of month.
[3] Estimated.
[4] Still rising at end of month.
[5] Ice gorge.

THE EFFECT OF WEATHER ON CROPS AND FARMING OPERATIONS, MARCH, 1929

By J. B. KINCER

General summary.—Weather conditions during the first decade were generally unfavorable for field work in most of the South, as wet soil hindered plowing and seeding. Some drying occurred in the eastern Cotton Belt toward the close of the period, but in the main parts of the belt it continued unfavorably wet, except in western sections, where fairly good progress in field work was made. In the interior valleys little work was possible, due to frozen ground or wet soil, but the milder weather in western grazing sections was a great relief for livestock from the previous severe conditions.

During the second decade disastrous floods occurred in the Southeastern States, notably in parts of Georgia, southern Alabama, and some adjoining sections. Much damage by washing and flooding was done, and quite generally in the eastern Cotton Belt rains and wet soil further retarded field operations, with many early prepared fields in parts of the Southeast washed out. Abnormally warm weather in the northern States caused the snow cover to disappear rapidly, while in the Great Plains the soil dried quickly with conditions favorable for field work, although very little had been accomplished in the more northern States. Conditions were mostly favorable for livestock interests in the West, while the rains of the previous decade improved pastures and ranges in California.

The summerlike conditions that prevailed during the last decade in the eastern half of the country caused vegetation to advance rapidly, with early fruit trees blooming as far north as Kentucky and eastern Maryland, and buds swelling in some more northern portions. There was very little improvement in the Southeast, however, for although the temperatures were high and the latter part of the period fair, the soil continued too wet. In more western parts of the Cotton Belt outdoor work made better advance, with corn seeding progressing to southern Oklahoma, but the planting of cotton was still confined to extreme southern Texas and locally in Louisiana.

Small grains.—Winter wheat needed warmth during the first decade in the southern Great Plains, but weather conditions were mostly favorable, except in western Kansas and southwestern Nebraska, where it was too dry. There was some unfavorable thawing and freezing in the eastern belt and some reports of winterkilling were received from the Middle Atlantic section. Wheat continued to look well in the far Northwest and rains in the Southwest were beneficial. With moderate to rather high temperatures during the second decade wheat fields greened up appreciably rather generally, with the entire wheat area cleared of snow and an abundance of moisture generally. Fair to good condition was reported from most places, except for some damage by drifting soil in the southwestern belt and some winterkilling in Pennsylvania; wheat was not doing well in parts of Washington. Growth was markedly stimulated during the last decade by high temperatures and moist soil in most of the principal producing areas. Rain was still needed in western Kansas, and moisture was also inadequate in the Pacific Northwest. Field work was inactive in the

spring wheat area due to unfavorable soil conditions and oat seeding was delayed by wet soil, except in the Plains States.

Miscellaneous crops.—There was some greening of grass in the East during the entire month, but toward the close rapid advance was made. Livestock did well in the northern Great Plains, with some ranging during part of the month, but feeding was again necessary in some parts at the close. Excellent weather prevailed in Wyoming the first of the month, but after the first decade rather unfavorable conditions obtained, with heavy feeding and some losses. Livestock were being fed in most other Rocky Mountain sections, although some greening of the range was reported locally. Moisture was needed in the Southwest, but some improvement of the range was noted; some deterioration of shorn sheep occurred.

Potato planting progressed well during the month and had advanced northward to Long Island at the close; the warm weather the latter part caused truck to make generally rapid advance. Fruit trees advanced in most sections, with peaches in bloom in Maryland and southern Indiana at the close of the month; no widespread frost injury occurred.

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WEATHER OF THE ATLANTIC AND PACIFIC OCEANS

NORTH ATLANTIC OCEAN

By F. A. YOUNG

The weather over the North Atlantic during March was most unusual in many respects. During the first eight days of the month an extensive area of low pressure covered the region usually occupied by the North Atlantic HIGH, while during this period there was a well-developed HIGH off the coast of northern Europe. This reversal of the normal pressure distribution was responsible for strong easterly gales over the eastern section of the southern steamer lanes in place of the usual westerlies. The number of days with gales was considerably above the normal over the region between the thirty-fifth and fiftieth parallels and the thirtieth and fifty-fifth meridians, while the weather over the eastern section of the northern steamer lanes was comparatively moderate, due to the persistent area of high pressure just referred to.

The number of days with fog was somewhat below the normal over the Grand Banks; considerably above off the American coast between the thirty-fifth and forty-fifth parallels as well as in the western part of the Gulf of Mexico and over Ireland; the middle section of the steamer lanes was comparatively clear.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure at sea level, 8 a. m. (seventy-fifth meridian). North Atlantic Ocean, March, 1929*

Stations	Average pressure	Departure [1]	Highest	Date	Lowest	Date
	Inches	*Inch*	*Inches*		*Inches*	
Julianehaab, Greenland	29.43	(2)	29.96	30th	28.86	20th.
Belle Isle, Newfoundland	29.67	−0.13	30.24	30th	28.14	7th.
Halifax, Nova Scotia	29.86	−0.04	30.44	12th	28.58	6th.
Nantucket	29.91	−0.09	30.36	11th [3]	28.90	7th.
Hatteras	30.07	+0.04	30.56	11th	29.42	7th.
Key West	30.03	0.00	30.12	11th [3]	29.88	5th.
New Orleans	30.01	−0.02	30.34	10th	29.70	4th.
Cape Gracias, Nicaragua	29.93	−0.05	29.98	10th [3]	29.88	1st.
Turks Island	30.11	+0.09	30.20	23d	30.00	6th. [3]
Bermuda	30.17	+0.14	30.52	12th	29.82	8th. [3]
Horta, Azores	29.93	−0.19	30.54	22d	28.92	5th.
Lerwick, Shetland Islands	30.15	+0.45	30.48	13th	29.64	31st.
Valencia, Ireland	30.20	+0.35	30.56	1st	29.82	20th.
London	30.35	+0.39	30.79	1st	30.08	22d.

[1] From normals shown on Hydrographic Office Pilot Chart, based on observations at Greenwich mean noon, or 7 a. m., seventy-fifth meridian time.
[2] No normal available. [3] And on other dates.

Charts VIII to XIII show the conditions from the 1st to 6th, inclusive, and give an idea of the unusual pressure distribution and weather that prevailed over the greater part of the ocean during this period.

Chart XIII shows the position of two disturbances on the 6th. By the 7th the western LOW was central in Newfoundland and on this day, as well as on the 8th, moderate to strong westerly gales still prevailed west of the fiftieth meridian. The eastern disturbance of the 6th moved but little during the next 24 hours, but had decreased considerably in intensity by the 7th, and comparatively moderate weather was the rule over the greater part of the ocean east of the fiftieth meridian, although there was a moderate gale of limited extent between the twentieth meridian and French coast.

On the 10th a disturbance was central over Newfoundland that moved slowly eastward, and on the 16th was near 47° N., 27° W. From the 12th to 15th moderate to strong gales prevailed over the western and middle sections of the steamer lanes, the storm area at times extending as far south as the thirtieth parallel.

From the 12th to 14th a well-developed depression was over the western part of the Gulf of Mexico, although moderate weather was experienced by vessels in that region.

On the 15th the station at Vera Cruz, Mexico, reported a northerly wind with maximum velocity of 64 miles an hour. This was evidently one of the extremely local "northers" that sometimes occur in these waters, as all reports from vessels near by indicated moderate winds only.

On the 18th Sable Island was near the center of a LOW of limited extent, with moderate to strong northwesterly gales in the southwesterly quadrants. The position of the center of this disturbance on the three following days was approximately as follows: 19th, 44° N., 45° W.; 20th, 47° N., 32° W.; 21st, 52° N., 23° W.

On the 22d there was a disturbance of limited extent near midocean, while the 23d was practically the only day on which no reports of winds of force 7 or over were received.

From the 25th to 28th southerly to westerly gales were prevalent over the middle and eastern sections of the steamer lanes.

On the 29th one of the most severe disturbances of the month was central about 300 miles northeast of Bermuda, of which there was no indication on the previous day; the storm area extended from the twenty-eighth to *forty-second parallels, and the fiftieth to seventieth* meridians. On the 30th the center was near 40° N., 52° W., while winds of force 7 to 12 were reported from the region north of the thirtieth parallel and west of the fortieth meridian. This LOW moved but little during the next 24 hours, and by the 31st the storm area had diminished considerably in extent.

WATERSPOUT

British steamship *Iroquois*, Capt. William Pritchard; observer, T. M. Mapplebeck; Baton Rouge to London:

March 2, 1929, at 3.30 p. m., L. M. T. in 35° 07′ N., 72° 50′ W. A waterspout passed alongside vessel. Temperature of air 58° F.; water 62° F. Immediately after waterspout wind shifted from SSE. to NNW., and commenced to blow a moderate gale and barometer to rise.